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10/524,891	10/31/2008	Jerome Assal	004501-804	5889
21839	7590	10/21/2008	EXAMINER	
BUCHANAN, INGERSOLL & ROONEY PC			CHU, CHRIS C	
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NOTIFICATION DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/524,891	<b>Applicant(s)</b> ASSAL ET AL.
	<b>Examiner</b> CHRIS C. CHU	<b>Art Unit</b> 2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 27 June 2008.

2a) This action is FINAL.      2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1 - 7 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1 - 3 and 5 - 7 is/are rejected.

7) Claim(s) 4 is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

1. Applicant's amendment filed on June 27, 2008 has been received and entered in the case.

***Claim Objections***

2. Claims 1 and 4 are objected to because of the following informalities:
  - (A) In claim 1, line 8, "a eutectic" should be -- an eutectic --.
  - (B) In claim 4, line 7, "a eutectic" should be -- an eutectic --.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 – 3 and 5 – 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Kodama et al. (U. S. Pat. No. 6,686,658).

Regarding claim 1, Kodama et al. discloses in e.g., Fig. 7 a power semiconductor module (the module in e.g., Fig. 7) comprising

- at least one semiconductor chip (11; column 8, line 59) made of a semiconductor material (Si; column 8, line 65) and having a first (the emitter electrode at the upper side of the substrate; column 8, lines 59 – 61) and a second (the collector electrode at the lower side; column 8, lines 61 and 62) main electrodes,
- a first (4; column 4, lines 56 and 57) and second (5; column 4, lines 56 and 57) main connections,
- a contact lamina (13; column 9, line 5) in electrical contact with the first main electrode (the emitter electrode at the upper side of the substrate) and the first main connection (4; see e.g., Fig. 7),
- the contact lamina (13) containing an alloying partner (AgW, etc.; column 11, line 64 – column 12, line 7), capable of forming a eutectic between the alloying partner and the semiconductor material (“capable of forming a eutectic between the alloying partner and the semiconductor material” is an intended use or functional language that does not differentiate the claimed structure over Kodama et al. Furthermore, applicant clearly states that between the Si substrate and Ag alloying partner forms an eutectic, see page 6, lines 4 – 8 of the specification of instant invention. Since Kodama et al. discloses the same materials as instant invention, hence the alloying partner within the contact lamina of Kodama et al. is capable of forming a eutectic between the alloying partner and the semiconductor material),
- the contact lamina (13) being coated with an electrically conductive protective layer (15 and 16; column 9, lines 8 – 17 and see e.g., Fig. 7),

wherein

- the protective layer (15 and 16) has at least one electrically conductive base layer (15) applied on the contact lamina (13; see e.g., Fig. 7), and
- an electrically conductive surface layer (16), which forms an external contact area (the area that contacts with the element 4; see e.g., Fig. 7),

and in that

- the base layer (15; Au layer, column 9, line 12) and the surface layer (16; Ni, column 9, line 14) substantially comprise different materials (column 9, line 12 and column 9, line 14).

Regarding claim 2, Kodama et al. discloses in e.g., Fig. 7 the base layer (15; column 9, line 12 and column 9, line 47) comprising Ni (column 18, lines 28 – 30) and having a thickness of approximately 1  $\mu\text{m}$  to 15  $\mu\text{m}$  (column 9, lines 52 – 53).

Regarding claim 3, Kodama et al. discloses in e.g., Fig. 7 the surface layer (16) having a thickness of between approximately 0.1  $\mu\text{m}$  to 5  $\mu\text{m}$  (column 9, lines 14 – 17).

Regarding claim 5, Kodama et al. discloses in e.g., Fig. 7 the semiconductor chip (11) internally having an IGBT structure (column 8, line 59) or a diode structure.

Regarding claim 6, Kodama et al. discloses in e.g., Fig. 7 the base layer (15) comprising a good covering material (column 9, lines 12 – 14 and see e.g., Fig. 7), and in that the surface layer (16) comprises a material having one or more of the following properties:

- a non-oxidizable, exhibiting little chemical reactivity (column 13, lines 2 – 5),
- b does not react chemically with a first electrode metallization of the first main electrode and exhibits neither contact corrosion nor material diffusion,
- c has a low coefficient of friction,

d can be deposited at temperatures at which the contact layer is not damaged or deformed.

Regarding claim 7, Kodama et al. discloses in e.g., Fig. 7 the thickness of the base layer (15) being approximately 2  $\mu\text{m}$  and 8  $\mu\text{m}$  (column 9, lines 52 – 53).

***Allowable Subject Matter***

5. Claim 4 is objected, but would be allowable if rewritten or correct the error in the claim limitation (see paragraph two of this Office action).

***Response to Arguments***

6. Applicant's arguments filed on June 27, 2008 have been fully considered but they are not persuasive.

On page 8, applicant argues "the nickel-plated film 16 'is formed on the surface of the common electrode plate' (emphasis added). Thus, the nickel-plated film 16 does not coat anything equivalent to the contact lamina, as required by amended claim 1." This argument is not persuasive. According to the Merriam-Webster's Collegiate Dictionary, 10<sup>th</sup> ed., the term "coat" is defined as a layer of one substance covering another. Since the Ni-plated film 16 covers the layer 15, hence the Ni-plated film 16 of Kodama et al. reads as the "coat" layer on the layer 15.

Furthermore, applicant argues "[I]n Kodama et al., the nickel-plated film is not arranged between the electrode metallization and the contact lamina. Therefore, the two layers of Kodama et al. have an order and arrangement which does not correspond to the requirements set forth in amended claim 1. Thus, for at least the reasons noted above, Kodama et al. fails to anticipates

the power semiconductor module specified in amended claim 1.” This argument is not persuasive because the claim 1 does not specifically claim that the coating layer, i.e., an electrically conductive protective layer, is coated or surrounded the all surfaces of the contact lamina or coated the top and bottom surfaces of the contact lamina. Thus, a reasonable interpretation of the term “coated” includes the Ni-plated film 16 of Kodama et al. being coated only top surface of the contact lamina 13. Therefore, the two layers of Kodama et al. have an order and arrangement which correspond to the requirements set forth in amended claim 1.

For the above reasons, the rejection is maintained.

#### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to CHRIS C. CHU whose telephone number is (571)272-1724. The examiner can normally be reached on 11:30 - 8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Monday, October 13, 2008